

IN THE CLAIMS:

Please cancel claims 1-24 without prejudice to or disclaimer of the subject matter recited therein.

Please add new claims 25-47 as follows:

LISTING OF CURRENT CLAIMS

Claims 1-24. (Canceled)

Claim 25. (New) A method for producing cross-linked polysaccharide-protein bio-composites, comprising the steps of:

- (a) preparing a mixture of a polysaccharide solution and a protein solution at a weight ratio of polysaccharide to protein in a range of 20/80 to 80/20;
- 5 (b) adjusting the mixture at a pH value between 3 and 11 by adding either an acid or a hydroxide, degassing, forming into a desired shape, and lyophilizing to give a matrix having a shape; and
- (c) subjecting the matrix to cross-linking reaction by using a cross-linking agent in a mixture of water and organic solvents.

Claim 26. (New) The method of claim 25, wherein the polysaccharide in the step (a) is chosen from the group consisting of hyaluronic acid, carboxymethyl cellulose, pectin, starch, chondroitin-4-sulfate, chondroitin-6-sulfate, alginate, chitosan, agar, carragenan and guar gum.

Claim 27. (New) The method of claim 25, wherein the protein in the step (b) is chosen from the group consisting of collagen, gelatin, or a mixture thereof.

Claim 28. (New) The method of claim 25, wherein the acid used in the step (b) is chosen from the group consisting of acetic acid, hydrochloric acid, or a mixture thereof.

Claim 29. (New) The method of claim 25, wherein the hydroxide used in the step (b) is chosen from the group consisting of sodium hydroxide, potassium hydroxide, or a mixture thereof.

Claim 30. (New) The method of claim 25, wherein the protein solution is prepared as an acid solution and the polysaccharide solution is prepared as an alkali solution.

Claim 31. (New) The method of claim 25, wherein the protein solution is a collagen solution prepared as an alkali solution and the polysaccharide is prepared as an acid solution so that pH of the resultant mixture is in a range between 5 and 11.

Claim 32. (New) The method of claim 25, wherein the protein solution is a collagen solution prepared as an acid solution and the polysaccharide solution is prepared as an alkali solution so that pH of the resultant mixture is in a range between 5 and 11.

Claim 33. (New) The method of claim 25, wherein the protein solution is a gelatin solution in de-ionized water, and the ion strength is adjusted to a desired strength by adding sodium chloride.

Claim 34. (New) The method of claim 25, wherein the matrix having a desired shape in the step (b) is a porous film matrix formed by casting the degassed matrix into a film and drying in an oven at a temperature of from 20 °C to 45°C.

Claim 35. (New) The method of claim 25, wherein the matrix having a desired shape in the step (b) is a porous matrix formed by freezing the degassed matrix in a refrigerator at a temperature of from -30°C to -100°C and lyophilizing under a vacuum to give the porous matrix having a porous structure which is inter-connective.

Claim 36. (New) The method of claim 25, wherein the matrix in step (b) is a power matrix formed by dropping the degassed matrix into a freezing solution at a temperature of from -30°C to -100°C by using a syringe, and lyophilizing under a vacuum to give the power matrix.

Claim 37. (New) The method of claim 25, wherein the matrix in step (b) is a fiber matrix formed by squeezing the degassed matrix into a solution of a coagulant in a mixture of water and an organic solvent, and drying to give a fibrous matrix having a thickness of from 50µm to 1mm.

Claim 38. (New) The method of claim 37, wherein the organic solvent is chosen from the group consisting of 1,4-dioxane, chloroform, methylene, chloride, N,N-dimethylformamide, N,N-dimethylacetamide, ethyl acetate, acetone, methyl ethyl ketone, methanol, ethanol, propanol, isopropanol, butanol and a mixture thereof; a percentage of the organic solvent is from 60% to 100% based on the total weight of the mixture of water and the organic solvent.

Claim 39. (New) The method of claim 38, wherein the organic solvent is a mixture of ketones and alcohols, and the percentage of the organic solvent is from 75% to 100% based on the total weight of the mixture of water and the organic solvent.

Claim 40. (New) The method of claim 25, wherein the cross-linking agent in step (c) is a carbodiimide.

Claim 41. (New) The method of claim 40, wherein the carbodiimide is selected from the group consisting of 1-methyl-3-(3-dimethylaminopropyl)-carbodiimide, 3-(3-dimethylaminopropyl)-3-ethyl-carbodiimide, 1-ethyl-3-(3-dimethylaminopropyl)-carbodiimide and a mixture thereof.

Claim 42. (New) The method of claim 25, wherein the mixture of water and organic solvent in the step (c) is consisting of 5%-50% by weight of water and 95 to 50% by weight of either ethanol or acetone, or the both; and the cross-linking reaction is carried out by using 0.5 to 25% by weight of carbodiimide under a pH of 4-5.5 at a temperature of from 20°C - 45°C for 1-6 hrs.

Claim 43. (New) The method of claim 42, wherein the mixture of water and organic solvent in the step (c) is consisting of 5% - 30% by weight of water and 95 to 70% by weight of either ethanol or acetone, or the both; and the cross-linking reaction is carried out by using 1 to 5% by weight of carbodiimide under a pH of 4-5.5 for 2-4 hrs.

Claim 44. (New) The method of claim 25, which, after the step (c), further comprises a step of washing the composite with a mixture of water and organic solvent, immersing it in a salt solution, and then washing it with distilled water.

Claim 45. (New) The method of claim 44, wherein the mixture of water and organic solvent is consisting of 5% - 50% by weight of water and 95 to 50% by weight of either ethanol or acetone, or the both, and the immersion time is from 0.5 - 3 hrs.

Claim 46. (New) The method of claim 45, wherein the mixture of water and organic solvent is consisting of 5% - 30% by weight of water and 95 to 70% by weight of either ethanol or acetone, or the both.

Claim 47. (New) The method of claim 44, wherein the salt solution is used in a concentration of 0/15 - 4 M and the salt used is chosen from the group consisting of sodium chloride, dibasic sodium phosphate and a mixture thereof.